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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,640	10/26/2001	Michael S. Foster	030048032US	1133
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/046,640

Applicant(s)

FOSTER ET AL.

Examiner

Christine Ng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-15,18-29 and 32-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-15,18-29 and 32-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims are objected to because of the following informalities:
 - a) In claim 1 line 11: "connect" should be changed to --connected--.
 - b) In claim 1 line 18: "connect-to" should be changed to --connected-to--.
 - c) Claim 5 depends on cancelled claim 4.
 - d) In claim 9 line 6: "connect" should be changed to --connected--.Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claim 1, 5, 6, 9, 18, 19, 23, 32 and 33 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 claims that the network identifies switches of the network via the received responses and claim 6 claims that *when a switch is identified*, the network manager performs the retrieving of the indications of which of the ports of the switch are connected to a connected-to port. However in claim 1, the "retrieving an indication" step (lines 9-10) is performed before the "receiving a response" step (lines 14-15).

Claim 18 claims that the network identifies the routing devices of the network via the received responses and claim 19 claims that *when a routing device is identified*, retrieving of the indications of which of the ports of the routing device are connected to

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another port is performed. However in claim 9, the "retrieving an indication" step (lines 4-5) is performed before the "receiving a response" step (lines 8-9).

Claim 32 claims that the network identifies the routing devices of the network via the received responses and claim 33 claims that *when a routing device is identified*, retrieving of the indications of which of the ports of the routing device are connected to another port is performed. However in claim 23, the "retrieving an indication" step (lines 4-5) is performed before the "receiving a response" step (lines 7-8).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,003,074 to Vasconcellos in view of U.S. Patent No. 4,733,391 to Godbold et al, and in further view of U.S. Publication No. 2003/0133417 to Badt, Jr.

Referring to claim 1, Vasconcellos discloses in Figure 1 a method for identifying topology of a network (subnetwork 12), the network including a plurality of switches (routers 14), each switch having ports, each port of a switch either being connected to another port (router 14 has ports that can be connected to other devices, such as switch 16). The method comprises:

Under control of a network manager (network administrator node 30), for each of the switches,

Retrieving an indication of which of the ports of the switch are connected to a connected-to port (port connected to a device, such as switch 16). Network administrator node 30 executes OpenView software 32. OpenView 32 periodically queries routers to identify all devices that are connected to each router port. A router port will not respond if there is no device connected to it, so that port is not connected to a connected-to port. Refer to Column 1, lines 24-36; Column 2, line 60 to Column 3, line 13; and Column 3, lines 45-53.

For each port that is connected to a connected-to port, sending a query message through that port to the connected-to port. OpenView 32 “periodically queries routers to identify all devices that are connected to each router port” (Column 1, lines 26-27).

Receiving a response from the connected-to port identifying the connected-to device and connected-to port. Openview 32 “enables acquisition of the identity of all devices connected to the specific ports of router 14” (Column 2, lines 65-67). In step 50 of Figure 2a, Openview 32 determines for each router 14, “the identity of each devices connected to each port of router 14,... and the identity of each such port” (Column 3, lines 47-50).

Wherein mappings from each switch and port to its connect-to device and connected-to port indicates the topology of the network. Using network topology procedure 34 and configuration table 36, Openview “identifies all devices physically

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connected between a particular node within subnetwork 12 and router 14" (Column 3, lines 3-5).

Vasconcellos does not disclose that each port of a switch can be *not connected* to another port; and under control of each switch, determining whether each port of the switch is connected to a connected-to port.

Godbold et al disclose in Figure 4a that some ports of switches (repeaters R1-R6) are connected and some are not connected. Repeaters R2, R3, and R6 have one port not connected, and repeater R6 has two ports not connected. Refer to Column 16, line 68 to Column 17, line 3. Each repeater also determines which ports are not connected to a connected-to port and which ports are connected to a connected-to port by sending out query-connect signals. If a repeater sends a query-connect signal on an unused port and does not received a signal back within a predetermined time, the port is not connected to any device. For example, R2 sends a query-connect signal to S2 and receives a signal back, but when R2 sends a query-connect signal on unused path P2X, it does not receive a signal back. Refer to Column 17, lines 43-50. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that each port of a switch can be *not connected* to another port; and under control of each switch, determining whether each port of the switch is connected to a connected-to port. One would have been motivated to do so since not all ports of a switch will be connected to a device, so resources will not be wasted by sending signals to unused ports.

Vasconcellos also does not disclose wherein the query message is sent via out-of-band communications.

Badt, Jr disclose in Figure 7 a method of obtaining the topology of available spare links in a network. The signaling can be done via in-band messages or out-of-band messages. With in-band communication, the signals travels over the same physical piece of media as the traffic. With out-of-band communication, the signals can be delivered in any possible way. Refer to Paragraphs 0071, 0072, 0151 and 0163. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the query message is sent via out-of-band communications. One would be motivated to do so in order to allow messages to be delivered over any communication channel that is available, thereby saving processing time.

Referring to claim 2, Vasconcellos discloses in Figure 1 wherein processing of the network manager is distributed to the switches. Network administrator node 30 executes OpenView software 32. OpenView 32 periodically queries routers to identify all devices that are connected to each router port. Refer to Column 1, lines 24-36.

Referring to claim 5, Vasconcellos discloses in Figure 1 wherein the network manager identifies switches of the network via the received responses. Openview 32 uses the responses to determine all devices physically connected between a particular node within subnetwork 12 and router 14. Refer to Column 2, line 67 to Column 3, line 5.

Referring to claim 6, Vasconcellos discloses in Figure 1 wherein when a switch is identified, the network manager performs the retrieving of the indications of which of the ports of the switch are connected to a connected-to port. OpenView 32 periodically queries routers to identify all devices that are connected to each router port. Refer to Column 1, lines 24-36.

Referring to claim 7, Vasconcellos discloses in Figure 1 wherein the connected-to device is a node (switch 16). Switch 16 is a node connected to a port of router 14.

Referring to claim 8, Vasconcellos discloses in Figure 1 wherein the connected-to device is a switch (switch 16). Switch 16 is a switch connected to a port of router 14.

6. Claims 9-12, 14, 15, 18-26 and 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,003,074 to Vasconcellos in view of U.S. Publication No. 2003/0133417 to Badt, Jr.

Referring to claims 9 and 23, Vasconcellos disclose a method for identifying topology of a network (subnetwork 12), the network including a plurality of routing devices (router 14), each routing device having ports. The method comprises:

Retrieving an indication of which of the ports of the routing devices are connected to another port (port connected to a device, such as switch 16). Network administrator node 30 executes OpenView software 32. OpenView 32 periodically queries routers to identify all devices that are connected to each router port. A router port will not respond if there is no device connected to it, so that port is not connected to a connected-to port. Refer to Column 1, lines 24-36; Column 2, line 60 to Column 3, line 13; and Column 3, lines 45-53.

For each port that is connected to another port,

Sending a query message through that port to the other port. OpenView 32 “periodically queries routers to identify all devices that are connected to each router port” (Column 1, lines 26-27).

Receiving a response from the other port identifying the other device and the other port. Openview 32 “enables acquisition of the identity of all devices connected to the specific ports of router 14” (Column 2, lines 65-67). In step 50 of Figure 2a, Openview 32 determines for each router 14, “the identity of each devices connected to each port of router 14,... and the identity of each such port” (Column 3, lines 47-50).

Vasconcellos does not disclose wherein the query message is sent via out-of-band communications. Refer to the Badt, Jr rejection part of claim 1.

Referring to claims 10 and 24, Vasconcellos discloses in Figure 1 generating a mapping from each routing device and port to device and port to which it is connected to indicate the topology of the network. Using network topology procedure 34 and configuration table 36, Openview “identifies all devices physically connected between a particular node within subnetwork 12 and router 14” (Column 3, lines 3-5).

Referring to claims 11 and 25, Vasconcellos discloses in Figure 1 wherein the routing device is a switch (switch 16). Switch 16 is a switch connected to a port of router 14.

Referring to claims 12 and 26, Vasconcellos discloses in Figure 1 wherein a routing device is an interconnect fabric module (switch 16). Switch 16 is an interconnect fabric module connected to a port of router 14.

Referring to claim 14, Vasconcellos discloses in Figure 1 wherein the identification of the topology is performed by a network manager (network administrator node 30). Network administrator node 30 executes OpenView software 32, network topology procedure 36, and configuration table 36 to determine network topology. Refer to Column 1, lines 24-36; Column 2, line 60 to Column 3, line 13; and Column 3, lines 45-53.

Referring to claim 15, Vasconcellos discloses in Figure 1 wherein the network manager is distributed to the routing devices. Network administrator node 30 executes OpenView software 32. OpenView 32 periodically queries routers to identify all devices that are connected to each router port. Refer to Column 1, lines 24-36.

Referring to claims 18 and 32, Vasconcellos discloses in Figure 1 wherein the routing devices of the network are identified via the received responses. Openview 32 uses the responses to determine all devices physically connected between a particular node within subnetwork 12 and router 14. Refer to Column 2, line 67 to Column 3, line 5.

Referring to claims 19 and 33, Vasconcellos discloses in Figure 1 wherein when a routing device is identified, retrieving an indication of which of the ports of the routing device are connected to another port. OpenView 32 periodically queries routers to identify all devices that are connected to each router port. Refer to Column 1, lines 24-36.

Referring to claims 20 and 34, Vasconcellos discloses in Figure 1 wherein the retrieving of an indication of which of the ports of the routing devices are connected to

another port includes sending a request to the routing device. Network administrator node 30 executes OpenView software 32. OpenView 32 periodically queries routers to identify all devices that are connected to each router port. A router port will not respond if there is no device connected to it, so that port is not connected to another port. If the router port is connected to another port, the router will respond with the identity of the device and the port. Refer to Column 1, lines 24-36; Column 2, line 60 to Column 3, line 13; and Column 3, lines 45-53.

Referring to claims 21 and 35, Vasconcellos discloses in Figure 1 wherein the retrieving of an indication of which ports of the routing devices are connected to another port includes receiving a message from the routing device. Network administrator node 30 executes OpenView software 32. OpenView 32 periodically queries routers to identify all devices that are connected to each router port. A router port will not respond if there is no device connected to it, so that port is not connected to another port. If the router port is connected to another port, the router will respond with the identity of the device and the port. Refer to Column 1, lines 24-36; Column 2, line 60 to Column 3, line 13; and Column 3, lines 45-53.

Referring to claims 22 and 36, Vasconcellos discloses in Figure 1 wherein each routing device determines which of its ports are connected to another port and the retrieving of an indication of which of the ports of the routing devices are connected to another port includes transmitting the determined information to a network manager (network administrator node 30). Network administrator node 30 executes OpenView software 32, network topology procedure 36, and configuration table 36 to determine

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network topology. Refer to Column 1, lines 24-36; Column 2, line 60 to Column 3, line 13; and Column 3, lines 45-53.

7. Claims 13 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,003,074 to Vasconcellos in view of U.S. Publication No. 2003/0133417 to Badt, Jr, and in further view of U.S. Patent No. 5,914,938 to Brady et al.

Referring to claims 13 and 27, Vasconcellos does not disclose wherein the routing devices use virtual addresses to route frames.

Brady et al disclose in Figure 1 a network with several virtual LANs 12 that utilize virtual addresses to route frames. A virtual LAN is a broadcast domain that can unite groups of LAN segments together in order to connect hundreds of LAN users. A network administrator can define the user groups regardless of the physical LAN segment to which they are connected. Users assigned to the same virtual LAN can communicate regardless of the physical location. Refer to Column 1, lines 10-65. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the routing devices use virtual addresses to route frames. One would have been motivated to do so in order to establish virtual LANs which can connect hundreds of users together in different physical locations.

Referring to claim 28, Vasconcellos does not disclose that the network manager includes a component that configures each routing device with routing data for virtual addresses.

Brady et al disclose in Figure 1 a network with several virtual LANs 12 that utilize virtual addresses to route frames. Each frame of data should include a source address, a destination address, data, and other information to use for routing to a destination. There must be some network manager that assigns addresses to each device so packets can be routed accordingly. Refer to Column 1, lines 10-65 and Column 4, lines 54-67. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the network manager includes a component that configures each routing device with routing data for virtual addresses. One would have been motivated to do so in order to route data packets across virtual LANs and within virtual LANs.

Referring to claim 29, Vasconcellos does not disclose wherein each frame of data identifies a destination virtual address.

Brady et al disclose in Figure 1 a network with several virtual LANs 12 that utilize virtual addresses to route frames. Each frame of data should include a virtual source address and virtual destination address to use for routing. Refer to Column 1, lines 50-65 and Column 4, lines 54-67. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein each frame of data identifies a destination virtual address. One would have been motivated to do so in order to route packets across virtual LANs or within virtual LANs to their destinations.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Ng whose telephone number is (571) 272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C. Ng *CN*
May 15, 2007


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